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10/022,712	12/17/2001	Dmitri Litvinov	SEAG 49243	6468

7590

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EXAMINER

DAVIS, DAVID DONALD

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 06/11/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

10/022,712

Applicant(s)

LITVINOV ET AL.

Examiner

David D. Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 15-21 is/are rejected.
- 7) ☒ Claim(s) 7-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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### **DETAILED ACTION**

#### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

2. Receipt is acknowledged of the Information Disclosure Statement (IDS) received December 17, 2001.

#### ***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

#### ***Claim Objections***

4. Claim 6 is objected to because of the following informalities: Specifically, in line 3 of claim 6, "Ni/Fe (44/55)" should be --Ni/Fe (44/55)--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

5. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, in line 3 of claim 20 "the inner and outer magnetic elements" is indefinite because it lacks antecedent basis.

*Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2 and 7-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanagida (US 4,385,334). As per claim 1, Yanagida shows in figures 1 and 3 a perpendicular magnetic recording head 26 for use with a magnetic recording medium 10 to improve resolution. The magnetic recording medium 10 having a hard magnetic recording layer and a soft magnetic underlayer 10<sub>2</sub>. See column 3, lines 13-31. The perpendicular magnetic recording head 26 includes a read element having a first side and a second side and a first magnetic flux generating element 18 spaced apart from the first side of said read element. The first magnetic flux generating element 18 transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element 18, and a second magnetic flux generating element 20 is spaced apart from the second side of said read element. The second magnetic flux generating element 20 transmits a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element 20. See column 3, lines 42-51. As per claim 2, Yanagida also shows in figures 1 and 3 the first and second magnetic flux generating elements 18 and 20 are positioned adjacent an electrically conductive element 22, which induces the magnetic flux in the first and second magnetic flux generating elements 18 and 20.

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As per claim 15, Yanagida shows in figures 1 and 3 a perpendicular magnetic recording head 26 including a read element 44 and means for generating a magnetic flux which improves resolution during operation of said read element 18 and 20. As per claim 16, the means for generating a magnetic flux of Yanagida, as shown in figures 1 and 3, includes at least one magnetic flux generating element 18 or 20 spaced apart from said read element 44. As per claim 17, Yanagida shows in figures 1, 3, 18 and 19 the magnetic flux generating element 18, 20, 36 and/or 50 *at least partially* circumferentially disposed about read element 44.

As per claim 18, inherent in Yanagida is a magnetic disc drive storage system including a housing. Yanagida shows in figures 1 and 3 a magnetic recording medium 10 having a hard magnetic recording layer and a soft magnetic underlayer and a perpendicular magnetic recording head 26 positioned adjacent the magnetic recording medium 10. The recording head 26 includes a read element 44 having a first side and a second side. A first magnetic flux generating element 18 is spaced apart from the first side of the read element 44 with first magnetic flux generating element 18 transmitting a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the first magnetic flux generating element 18. A second magnetic flux generating element 20 is spaced apart from the second side of the read element 44 with the second magnetic flux generating element 20 transmitting a magnetic flux into the soft magnetic underlayer adjacent an air-bearing surface of the second magnetic flux generating element 20. The first and second magnetic flux generating elements 20 improve the resolution of the recording head 26. As per claim 20, Yanagida shows in figures 1 and 3 that the flux transmitted to the soft magnetic underlayer is concentrated in an area of the soft magnetic underlayer beneath the magnetic elements and therebetween.

*Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3-6 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagida et al (US 4,385,334) in view of Lazzari (US 5,196,976). As per claims 3-5, Yanagida discloses in column 3, lines 42-51 that the magnetic flux is transmitted to the soft magnetic underlayer by the first and second magnetic flux generating element 18. As per claim 19, Yanagida et al discloses an air-bearing surface of the first and second magnetic flux generating elements 18 and 20 being spaced from a boundary layer of the soft magnetic underlayer. As per claim 19, Yanagida is considered to have the flux elements spaced from a boundary layer of the soft magnetic underlayer a distance of from about 5 nm to about 10 nm.. As per claim 21, the

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flux of the head of Yanagida is considered to transmit to the soft magnetic underlayer and have the effect of curving a boundary layer of the soft magnetic underlayer.

Regarding claims 3-5, Yanagida, however, is silent as to the flux flowing in an opposite direction within or away from an area of the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the first and second magnetic flux generating element. Regarding claim 6, Yanagida is silent as to the first and second magnetic flux generating elements 20 include at least one material selected from the group consisting of Permalloy, FeAlN, Fe/Co and Ni/Fe (45/55).

Lazzari shows in figure 10 and describes in column 3, line 36 through column 4, line 19 that the flux flows in an opposite direction within or away from an area of the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the first and second magnetic flux generating element.

Official notice is taken of the fact that magnetic flux elements including at least one material selected from the group consisting of Permalloy, FeAlN, Fe/Co and Ni/Fe (45/55) is notoriously old and well known in the magnetic head art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the flux of Yanagida flowing in an opposite direction within or away from an area of the soft magnetic underlayer than the flow of the magnetic flux transmitted to the soft magnetic underlayer by the first and second magnetic flux generating element as taught by Lazzari. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide flux to flow in an opposite direction within or away from an area of the soft magnetic underlayer than the flow of the magnetic flux

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transmitted to the soft magnetic underlayer by the first and second magnetic flux generating element to "make it possible to read two different resistances corresponding to the resistances of the material for orientation". See column 4, lines 13-20 of Lazzari.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to specify the flux generating elements of Yanagida include at least one material selected from the group consisting of Permalloy, FeAlN, Fe/Co and Ni/Fe (45/55) as suggested in the art. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to specify that flux generating elements included at least one material selected from the group consisting of Permalloy, FeAlN, Fe/Co and Ni/Fe (45/55), which is well within the purview of a skilled artisan and absent an unobvious result, because the materials are readily obtainable for procurement for the manufacturing process and have excellent magnetic characteristics for use in magnetic transducing elements.

#### ***Allowable Subject Matter***

11. Claims 7-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

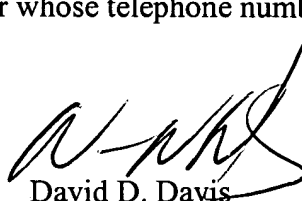
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Mon., Tues., Thurs. and Fri. between 7:30-6:00. The fax



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phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900. Any other inquiry should be directed to the customer service center whose telephone number is (703) 306-0377.

A handwritten signature in black ink, appearing to read 'D. Davis', with a stylized flourish extending from the end.

David D. Davis  
Primary Examiner  
Art Unit 2652

ddd  
June 8, 2003